



## **PRELIMINARY ASSESSMENT**

K-Lines Inc.  
17375 SW 63<sup>rd</sup> Ave.  
Lake Oswego, Oregon 97035  
EPA ID #ORSKN1002089

September 22, 1999

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## **1. INTRODUCTION**

Pursuant to a Cooperative Agreement (V-990519-02) between the U.S. Environmental Protection Agency (EPA) and the Oregon Department of Environmental Quality (DEQ), the DEQ conducted a Preliminary Assessment (PA) of the site known as K-Lines Inc. located in Lake Oswego, Clackamas County, Oregon.

PAs are intended generally to identify potential hazards at a site, identify sites that require immediate action, and to establish priorities for sites requiring in-depth investigations. The PA is based on readily available information about the site and is not a full investigation or characterization of the site.

The K-Lines Inc. PA was conducted to identify potential public health and environmental threats related to the site. The PA is based on data derived from the sources listed in the back of this report. The scope of the investigation includes review of available file information, interviews, a comprehensive target survey, and an on-site reconnaissance inspection.

## 2. GENERAL SITE DATA

Site Name and Address: K-Lines Inc.  
17375 SW 63<sup>rd</sup> Ave.  
Lake Oswego, OR 97035

CERCLIS #: ORSKN1002089

Current Owner(s): Steve Berrey  
18879 SW Martinazzi Ave.  
Tualatin, OR 97062

Current Operator(s): PRIME Service, Inc.  
17375 SW 63<sup>rd</sup> Ave.  
Lake Oswego, OR 97035

Speed's Towing  
17375 SW 63<sup>rd</sup> Ave.  
Lake Oswego, OR 97035

Site Contact(s): Steve Berrey  
18879 SW Martinazzi Ave.  
Tualatin, OR 97062

Latitude: 45° 24' 2" N.

Longitude: 122° 44' 45" W.

Legal Description: The facility is located in the southwest quarter of the northwest quarter of Section 18, Township 2 South and Range 1 East (Willamette Base Line and Meridian).

Directions to site: From Portland, Oregon, travel south on Interstate 5 to the Lake Oswego/Durham exit. Turn east (left) onto Boones Ferry Road. Travel east approximately 0.3 miles to 63<sup>rd</sup> Avenue. Turn north (left) onto 63<sup>rd</sup> Avenue. The K-Lines site is located approximately 0.2 miles north of Boones Ferry Road on the west (left) side of 63<sup>rd</sup> Avenue.

### **3. SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS**

#### **3.1 Site Description**

The site is located on the west side of SW 63<sup>rd</sup> Avenue, approximately two blocks north of Boones Ferry Road and four blocks east of Interstate 5 (Figures 1 & 2). The site is bordered to the north by a vacant parcel of land, to the east and west by light industrial facilities, and to the south by Industrial Coatings, a company that strips and resurfaces used industrial bakeware (Figure 3). A federal Preliminary Assessment was conducted at the Industrial Coatings "site" (including Industrial Coatings and properties to the east) in 1989, and a Site Screening Investigation was conducted in 1990-1991. (CERCLIS ID # ORD987172541). The Oregon Department of Environmental Quality (DEQ) is currently conducting an investigation and cleanup of Industrial Coatings through its Voluntary Cleanup Program.

South of Industrial Coatings and north of Boones Ferry Road is a commercial strip, dominated by Safeway (a grocery store) and G.I. Joe's (an automotive and sporting goods store). The commercial strip extends along both sides of Boones Ferry Road and to the west of Interstate 5. The nearest residential neighborhoods are about a half-mile from the site, north of the vacant lot to the north of the site, and south and east of Boones Ferry Road (1, 4, 12).

At the time K-Lines operated at the site, there were three rows of fuel dispensers where trucks would be refueled (Figure 4). North of the fuel dispensers, trucks were rinsed out and cleaned off in a wash rack. Wastewater from the wash rack and runoff from the refueling area drained north into two wastewater treatment ponds. The ponds were each 100' x 25' x 4'. Wastewater in the ponds was allowed to settle before being discharged to an unnamed creek that runs west to east along the north site boundary. The ponds occasionally overflowed or discharged directly to the creek without settling. Solids from the ponds were disposed of at an off-site landfill (1, 3).

The site is identified in DEQ records under a variety of addresses, and even under different city names and zip codes. The site address is variously given as 17375 and 17765, on either SW 63<sup>rd</sup> Avenue or SW Boones Ferry Road. Early records also list the site as being in Lake Grove. The cities of Lake Oswego (to the east) and Tualatin (to the west) annexed portions of Lake Grove. The site is now within the Tualatin city limits, but the current site lessees both give their address as 17375 SW 63<sup>rd</sup> Avenue in Lake Oswego.

#### **3.2 Ownership and Operational History**

K-Lines, Incorporated, a trucking company that transported bulk commodities, was acquired by James Berrey and his son, Steve, in 1963. At about the same time, the Berreys also acquired the then-undeveloped 63<sup>rd</sup> Avenue site. The Berreys relocated K-Lines to the 63<sup>rd</sup> Avenue site in 1972. No information is available on prior ownership or operation of K-Lines. Steve Berrey bought out his father's share of K-Lines around 1975 (1).

Figure 1

Figure 2

Figure 3

Figure 4

Cement accounted for about 70% of K-Lines' total cargo. K-Lines also shipped lime, urea, and fertilizers. Up to four trucks in the fleet were dedicated to shipping lead oxide. The lead oxide was shipped from Seattle to lead-acid battery manufacturers in the Portland area (1). K-Lines used the 63<sup>rd</sup> Avenue site for truck storage, maintenance, cleaning, and refueling. A December 1995 DEQ Strategy Recommendation indicated that K-Lines may also have unloaded bulk materials from a railcar siding to the east of 63<sup>rd</sup> Avenue (3). However, while reviewing file information for this report, no other mention of a siding was found, and no siding is indicated on any maps of the area. Whether a siding was once present or not, as indicated on Figure 3 the area to the east of 63<sup>rd</sup> Avenue is now part of the Industrial Coatings site, and any releases in that area will be remediated as part of the on-going DEQ-supervised cleanup of that site.

Steve Berrey sold K-Lines to Gresham Transfer (another bulk shipping company) in 1989 but retained ownership of the site. Two companies currently lease the site. PRIME Service, Inc., doing business as PRIME Equipment, rents and sells a wide variety of mechanized construction and industrial equipment, from air compressors to earth movers. PRIME operates from a building on the southern half of the site, where they inspect, clean, and repair equipment before and after it has been rented. Speed's Towing parks tow trucks and stores impounded automobiles in a fenced lot on the northern half of the site. Steve Berrey still owns the site (1).

### **3.3 Regulatory History**

The Oregon Department of Environmental Quality (DEQ) first became involved with K-Lines in response to a November 1974 complaint. The complainant alleged that K-Lines had washed out its trailers and deposited "several hundred pounds" of lead oxide on the road. DEQ staff visited the site and talked with Steve Berrey. Berrey told DEQ that his trucks were washed out twice a year, and that the material was "buried". DEQ collected a composite soil sample of "dry mud" from the truck wash rack in December 1974. The sample was analyzed for lead. The sample results showed 28 milligrams per kilogram (mg/kg) of lead, which was later changed in DEQ's records to 2,800 mg/kg (no explanation was given for the change). The contaminated mud had been "buried" when DEQ revisited the site in January 1975. DEQ also found that K-Lines was discharging wastewaters to the adjacent creek without a water quality permit. DEQ required K-Lines to obtain an appropriate permit. After meeting with DEQ in February 1975, Steve Berrey agreed to arrange to have his customers "clean out all the lead oxide at their plants". Berrey also agreed to construct a wastewater recycling system for the truck wash rack (5).

DEQ revisited the site in March 1977 in response to a complaint. An overflow pipe between the wastewater treatment ponds was blocked with what appeared to be cement, and water from the first pond was overflowing into the creek. Steve Berrey agreed to clean out the ponds and haul the material to a landfill (6). DEQ visited the site again in August 1981. By this time, the second pond had been modified so that it discharged directly to the creek. DEQ gave K-Lines a week to stop discharging to the creek (7).

DEQ notified K-Lines again in June 1985 that it needed to obtain a Water Pollution Control Facility (WPCF) permit for the treatment ponds (8). The request was repeated in a June 1987 Water Quality Review Report. K-Lines finally received a WPCF permit (#100369) from DEQ



on August 21, 1987. Under the permit, K-Lines installed a pH neutralizer on the treatment ponds, and created a bermed area for pond solids to dry out in before being hauled to the Grabhorn Landfill. In the winter of 1987-88, K-Lines received DEQ permission to spray irrigate treated wastewater onto fields near the property to prevent the treatment ponds from overflowing. The permit was terminated on July 19, 1989, after DEQ learned that K-Lines was no longer in business at the site (9).

DEQ's Site Assessment program conducted a screening of the site from November to December 1995. As part of the screening, DEQ records on the site were reviewed, and limited pathway information was developed for about a one-mile radius around the site. The site scored as a "medium-high" priority on DEQ's Site Assessment Prioritization System (SAPS). DEQ summarized the screening results in a Strategy Recommendation and referred the information to the United States Environmental Protection Agency (EPA) as a federal screening (3).

### **3.4 Source Areas and Waste Characteristics**

In April 1985, DEQ collected a water sample from each of the two settling ponds and from the creek north of the ponds, and collected two soil samples from a solid waste pile at the east end of the ponds. The sample results showed lead concentrations in the west "lagoon" and the creek at 0.1 milligrams per liter (mg/l), and in the east "lagoon" at 0.2 mg/l. The soil samples were "x-ray scanned for metals". One sample of the solid waste pile had no detectable lead; the other sample had 50 parts per million (ppm) lead. Zinc was present in the second sample at 470 ppm, and strontium was present in both samples (up to 275 ppm). Other metals were reported as a percentage of the sample (8). Calcium was present up to 40%. Concentrations of lead, zinc, and calcium exceeded background levels for Oregon soils (22).

Additional water samples were collected from the unnamed creek in December 1987 and January 1989 and analyzed for lead. The December 1987 samples, labeled "Above Pond" and "Below Pond", both showed 0.5 ppm total lead. The January 1989 samples, from the "Upper Stream" and "Lower Stream", showed lead at 0.013 ppm in the Upper Stream, and 0.006 ppm in the Lower Stream (9). Sample results for other metals, if analyzed for, were not reported.

On May 22, 1989, DEQ received a report of a surface spill of petroleum. The location of the spill was given as the "property adjacent" to K-Lines. No address was given. The site was recorded in DEQ's Leaking Underground Storage Tank (LUST) database under the K-Lines name and address. Cascade Earth Sciences collected samples from the spill area in December 1989. One composite soil sample was created from 20 auger samples. "TRPH-IR" was present in the sample at 449 milligrams per kilogram (mg/kg) under EPA Method 418.1. The sample was non-detect for polychlorinated biphenyls (Methods 3550 and 8080), volatile organic compounds (Methods 8010 and 8020) and "EP TOX" for lead, cadmium, and chromium (Method 6010). The sample results were reported to DEQ in February 1990. An internal DEQ memo from November 1991 recommended closing the file, because the petroleum did not appear to pose a significant environmental threat. The file was administratively closed on July 17, 1992. No cleanup appears to have been conducted (10).

On October 8, 1998, DEQ received a report of a petroleum release from leaking underground storage tanks at the site. Steve Berrey had retained Enviro-Comp Services, Inc. to decommission

unused tanks at the site. The release was discovered September 29 during the decommissioning. (The release was reported after the parties received laboratory confirmation of sampling results). The contaminants were reported as diesel and lube oil, impacting soil and groundwater. Enviro-Comp planned to determine the nature and extent of the contamination and submit a report to DEQ's LUST program. Although the investigation was carried out, the LUST program had not received the report as of September 1999 (11).

DEQ began work on a federal Preliminary Assessment at the site in late November 1998. As part of the Preliminary Assessment, DEQ staff conducted a site visit on April 20, 1999 and talked to Steve Berrey. Berrey indicated that the initial release of lead oxide reported to DEQ in November 1974 was a one-time event, and that the lead oxide had been properly buried in an off-site landfill. During the site visit, DEQ staff noticed a concrete washpad at the southwest corner of the site. PRIME Equipment uses the washpad to clean their equipment. The washpad includes a three-chambered oil/water separator that apparently discharges to a storm sewer line under 63<sup>rd</sup> Avenue. Neither Steve Berrey nor representatives of PRIME Equipment knew much about the construction of the washpad. (It was installed by C&E Rentals, a prior site lessee). Petroleum sheens were clearly visible on the mud and water in the separator (1, 2).

Enviro-Comp was aware of DEQ's concern regarding lead contamination at the site, and had analyzed soil and groundwater samples for lead while investigating the leaking underground storage tanks. Enviro-Comp planned to submit a separate report to DEQ outlining the sampling results for lead, but despite repeated requests by DEQ and Enviro-Comp to Steve Berrey to approve the report for distribution, DEQ had not received the report as of September 1999.

## **4. GROUNDWATER PATHWAY**

### **4.1 Regional Geologic Setting**

Northwestern Clackamas County, in which K-Lines Inc. is located, is underlain by a series of sedimentary and basaltic rock layers. Groundwater found in deeper consolidated rock units is generally confined, while groundwater in more shallow alluvium and terrace deposits is generally unconfined. Precipitation (48 inches per year) is the major source of groundwater recharge for the area (23, 26). From the ground surface downward, the primary units can be described as follows:

The near-surface geology consists of deltaic deposits of sand, gravel, and boulders up to 8 feet in diameter deposited in major floodways and channels during flood events. The channels are cut in earlier and/or contemporaneous fine and coarse flood sediments. Water well drilling logs from within one mile of the site indicate that these deposits are up to 80 feet thick in the area (4).

The Boring Lava consists of basalt, cinders and volcanic tuff and ranges in thickness from just a few feet to more than 600 feet. It occurs principally in upland areas southwest of the Clackamas River. This unit is very resistant to erosion and forms Mt. Scott, Kelly Butte and other hills in the area. Boring lavas have poor permeability and generally lie above the regional water table (23, 24).

The Troutdale Formation consists of cemented sand and gravels with occasional silt and clay layers, and is 100 to more than 500 feet thick. The Formation can be found cropping out along major stream valleys and underlying younger units in the western part of the area. Aquifers within the Troutdale are usually capable of supporting wells with yields of 200 to 500 gallons per minute (gpm). Most of the Portland area's major groundwater supplies are obtained from this aquifer (23, 24).

The Sandy River Mudstone consists of 500 to 700 feet of mostly dark, thin-bedded siltstone and claystone. These beds are largely non-waterbearing and are commonly referred to in drillers' logs as blue, gray, or brown clay or shale. Locally, however, the Sandy River Mudstone contains thin beds of sandstone or conglomerate that yield a few to about 50 gallons per minute to wells that are a few hundred feet deep (23, 24).

The Columbia River Basalt Group consists of a series of individual basalt flows and more permeable interbeds with a total thickness of more than 500 feet. Yields to wells are reported to range from 7 to 300 gallons per minute. There have been reports of individual well yields of 300 gpm and more. Water quality problems associated with upwelling of salt water restrict the use of this aquifer (23, 24).

### **4.2 Local Geology and Hydrogeology**

Previous drilling and test pit excavations on the adjacent Industrial Coatings property indicates that the subsurface is composed of unconsolidated deposits of bouldery pebbles and gravels in a

sandy silt matrix to a depth of approximately 30 feet. Underlying these deposits is a very dense blue clay unit. The base of the clay unit has not been reached during any of the investigations on the Industrial Coatings property. The upper surface of the clay unit appears to slope steeply in a southerly direction (4).

Groundwater at Industrial Coatings was encountered at depths ranging from 14 to 37 feet below ground surface, within the unconfined boulder cobble sand unit. Groundwater monitoring suggests that shallow groundwater flow is to the south-southwest, opposite the direction of the site topography, which slopes slightly to the north and northeast. The direction of groundwater flow appears to be influenced by the unnamed creek on the north site boundary, which may be discharging to the shallow groundwater (4).

### **4.3 Groundwater Targets**

Well logs were identified and reviewed on-line at the Oregon Water Resources Department web page, to determine the number of water wells within four miles of the site. A total of eight domestic wells were identified within a half-mile radius of the site. The nearest domestic well is approximately 400 feet southwest of the site. Within Section 18, Township 2 South, Range 1 East, there are seven domestic wells. This is the same section in which K-Lines is located (4, 14).

The Water Resources Department has records of 1,239 domestic wells within a four-mile radius of the site. Many of these wells are located to the south and west of the site, in areas that have only recently (less than 30 years ago) become urbanized. Urban areas to the north, east, and west of K-Lines are served by municipal water districts, so a public water supply is available to any well users in these areas. Some rural areas south of the Tualatin River may still rely on private domestic wells (15).

A four-mile radius from K-Lines encompasses portions of Clackamas, Multnomah, and Washington counties. Multiplying the number of recorded domestic wells by the average number of persons per household (2.67 in Clackamas County, 2.36 in Multnomah County, and 2.59 in Washington County) gives a total of 3,266 persons potentially using domestic wells within four miles of the site (17).

EPA's Geographic Information Query System ("SITEINFO") identified 12 public groundwater supply wells within a 5-mile radius of the site. Two of the wells (for Dammasch State Hospital) are not currently being used. The other 10 wells are within a 4-mile radius of the site. The Lake Oswego Municipal Water Service serves 22,319 persons from one well, the Tigard Water Department serves 16,000 persons from three wells, and the Rivergrove Water District serves 3,504 persons from two wells. Along with a handful of small water districts, the total population served within four miles of the site is 43,485 persons (13).

Oregon Water Resources Department well logs identified 34 wells within a 4-mile radius as "community" wells, which includes wells serving municipalities, businesses, and local districts (including school districts and park districts). The nearest community well is for the Durham Elementary School, approximately 5,000 feet west-northwest of K-Lines. The list of community wells includes the municipal wells identified by EPA. Other community wells are used for irrigation or other non-drinking water purposes (two wells are used to supply an artificial lake in downtown Tualatin) (15).

<u>Radial Distance from Site</u>	<u>Population Served by Municipal Wells</u>	<u>Population Potentially Served by Private Drinking Water Wells</u>
0 - 0.25 miles	0	5
0.25 - 0.5miles	0	16
0.5 – 1 miles	0	52
1 – 2 miles	4,254	345
2 – 3 miles	16,912	1,167
3 – 4 miles	22,319	1,679
Totals	43,485	3,266

#### 4.4 Groundwater Conclusions

There are many groundwater targets within a four-mile radius of the site: over 1,200 domestic wells, 10 municipal wells, and a number of community, industrial and irrigation wells. Surface water runoff from the site appears to discharge directly to the shallow groundwater via the unnamed creek. Leaking underground storage tanks were reported at the site in October 1998.

However, there is currently no direct evidence that the shallow groundwater has been impacted by releases at the site. The shallow groundwater flows to the south, and monitoring wells on the Industrial Coatings property to the south of the site have shown no impacts from the site. Lead oxide is largely insoluble and is unlikely to migrate through shallow groundwater. Petroleum releases may have impacted shallow groundwater, but the source areas have been removed. A dense blue clay layer should prevent any shallow contaminated groundwater from impacting deeper groundwater.

No municipal wells are present within a one-mile radius of the site. The nearest community well is almost a mile away, in an upgradient direction. Of the over 1,200 identified domestic wells, only 26 are in the same Section as K-Lines (Section 18) or are immediately downgradient from K-Lines (Section 19). Both areas are served by municipal water supplies.

Given the number of wells in the area and the nature of the suspected release, the K-Lines site appears to present a low to moderate risk for groundwater impacts.

## 5. SURFACE WATER PATHWAY

### 5.1 Hydrologic Setting

The site slopes gradually to the north, and surface water runoff from the site appears to discharge to the unnamed creek running west to east along the northern site boundary. The creek runs about 600 feet to the east before ponding at the base of a railroad embankment. (A similar "creek" runs along the base of the embankment to the east of the site). During periods of high rainfall, the ponded water flows through a culvert in the embankment and discharges to a wetland area on the east side of the embankment. The wetland area is centered about 1,000 feet east-northeast of the site in a low spot between three intersecting railroad embankments. Water in the wetland area appears to seep into the shallow groundwater; no surface water discharge from the wetland area has been identified (1).

Shallow groundwater appears to resurface at two natural springs approximately  $\frac{3}{4}$  mile east-northeast of K-Lines, and may resurface in Tualatin River, about one mile south of K-Lines. Water from the springs likely discharges to Lake Oswego (Oswego Lake), approximately one mile east-northeast of K-Lines. Some water from the Tualatin River is diverted into Lake Oswego through the Oswego Canal. Both Lake Oswego and the Tualatin River discharge to the Willamette River (3, 12).

Fanno Creek flows from north to south approximately three-quarters of a mile to the west of the site, discharging to the Tualatin River at about River Mile 9.4. Another pair of springs about one-third of a mile northwest of K-Lines may discharge to Fanno Creek or to the unnamed creek north of K-Lines. The K-Lines site itself does not lie in any known floodplain (3, 12).

### 5.2 Surface Water Targets

The overland distance from K-Lines to the wetland area via the unnamed creek is approximately 800 feet. Assuming water in the wetland area eventually reaches Lake Oswego through the shallow groundwater, the distance from the wetland to the western edge of the lake is about  $\frac{3}{4}$  of a mile. The lake is about  $2\frac{3}{4}$  miles long. The lake discharges at its eastern end via Oswego Creek to the Willamette River, a distance of about  $\frac{1}{2}$  mile. The Willamette River flows to the north. A 15-mile flowpath via Lake Oswego would end in the Willamette River at approximately River Mile 10, an area north (downstream) of downtown Portland but south (upstream) of the Portland Harbor (12).

Water from the wetland area may also reach the Tualatin River through the shallow groundwater. The Tualatin River is just over one mile south of the wetland area. From a point due south of the wetland area, the Tualatin River flows southeast  $7\frac{1}{4}$  miles to the Willamette River, entering the Willamette at River Mile 28.5. A 15-mile flowpath via the Tualatin River would end in the Willamette River at approximately River Mile 22.5, between Cedar Island and Hog Island in a stretch of river generally surrounded by residential areas (12).

A portion of the Tualatin River is diverted at River Mile 6.7 about  $1\frac{1}{2}$  miles north through the Oswego Canal to Lake Oswego. A 15-mile flowpath via the Tualatin River, Oswego Canal and Lake Oswego would end in the Willamette River at approximately River Mile 12, between the

Steel and Broadway Bridges in downtown Portland (12).

Information from the Oregon Water Resources Department identified one municipal drinking water intake within a 15-mile flowpath from the site. The City of Lake Oswego has a water right for six cubic feet per second of Willamette River water from River Mile 24, approximately 13.5 miles downstream from K-Lines via the Tualatin River flowpath. The water right is only used as part of an emergency backup system, however. Other identified water rights for municipal systems were for previously discussed municipal wells, and for river water intakes that are upstream from the site (16).

The Water Resources Department also showed water rights for three individuals for the previously discussed springs to the northeast and northwest of K-Lines. Ed Baker and Henry R. Wahoske have water rights for the springs located between the wetland area and Lake Oswego, and C.A. Cabe has water rights for the springs that may discharge to either Fanno Creek or the unnamed creek to the north of K-Lines. All three water rights are identified as being used primarily for irrigation (16).

Lake Oswego (Oswego Lake) is almost wholly surrounded by residential areas and is used for recreation (primarily boating). The stretch of the Tualatin River downstream from the site is occasionally used for canoeing and kayaking. The Willamette River is used for boating, fishing (particularly near Willamette Falls between River Miles 26 and 27), and some swimming near Oaks Park and Willamette Park at River Mile 16. Fanno Creek flows through Durham City Park  $\frac{3}{4}$  mile west of the K-Lines site.

Fanno Creek, the Tualatin River, and Willamette River do not meet water quality standards, and have been listed under Section 303(d) of the federal Clean Water Act. Fanno Creek exceeds water quality standards for arsenic, iron, manganese, bacteria, dissolved oxygen, chlorophyll a, and temperature. The Tualatin and Willamette Rivers also exceed water quality standards for bacteria and temperature. In addition, the Willamette River below Willamette Falls has been listed for skeletal deformities in fish and for high levels of mercury in fish tissue. The cause of the skeletal deformities (at River Mile 25.5) has not been identified (18).

Two threatened species, the Upper Willamette River Steelhead (*Oncorhynchus mykiss irideus*) and Upper Willamette River Chinook (*Oncorhynchus tshawytscha*) migrate through the lower Willamette River on the way to their spawning grounds in the upper river (19).

### 5.3 Surface Water Conclusions

The surface water pathway appears to be incomplete. The site slopes gradually to the north, and surface water runoff probably drains to the unnamed creek to the north of the site. The creek drains into a wetland area 800 feet from the site. The wetland area has no identified outlet, and probably discharges to the shallow groundwater. At the time of DEQ's site visit (April 1999), vegetation in the creek and wetland area appeared lush and healthy and not stressed in any way.

Shallow groundwater from the vicinity of the wetland area may reemerge in springs near Lake Oswego. Two individuals have water rights to use these springs, primarily for irrigation purposes. However, the springs are not likely to present an exposure pathway. Any

contaminated surface water from K-Lines is likely to be absorbed in the wetlands or otherwise filtered before reaching the springs.

Similarly, there is no direct surface water pathway between the site and either Lake Oswego (Oswego Lake) or the Tualatin River. Without a direct surface water connection, it seems likely that potential contaminants from the site (lead oxide and petroleum) will be absorbed in the wetland area and not make it to Lake Oswego or the Tualatin River.



## **6. SOIL EXPOSURE AND AIR PATHWAYS**

### **6.1 Physical Conditions**

K-Lines ceased operations at the site in 1989. The current operators of the site, PRIME Equipment and Speed's Towing, are not known to have released hazardous substances to the environment. Some contaminants associated with equipment cleaning (such as oil and grease) may have been released in the vicinity of the concrete wash pad in the southwest corner of the site. Leaking underground fuel storage tanks have been removed from the site, and at the time of DEQ's site visit in April 1999, the tank excavation pits were still open. Most of the site is fenced, and the auto impoundment lot is completely fenced. At least half of the site is paved over or built over. The remaining ground surface appears to consist of a hard-packed dirt and gravel mixture (1).

### **6.2 Soil and Air Targets**

MetroScan identified 65 single-family residences within a quarter mile of the site. K-Lines is near the Clackamas-Washington county border, so assuming half of the residences are in Clackamas County (with an average of 2.67 persons per household) and half are in Washington County (with an average of 2.59 persons per household), then approximately 171 people live within a quarter mile of the site (17, 20).

MetroScan also identified 506 single-family residences and two mobile homes within half a mile of the site. Again assuming that half of the residences are in Clackamas County and half are in Washington County, then approximately 1,336 people live within half a mile of the site (17, 20).

Finally, MetroScan identified 3,222 single-family residences, six mobile homes, 73 multifamily residences, 12 apartment houses, and four mobile home parks within one mile of the site. Conservatively assuming that each multifamily residence consists of two residences, and that each apartment complex and mobile home park consists of 20 residences, at least 9,715 people live within a mile of the site (17, 20).

EPA's Geographic Information Query System ("SITEINFO") identified 5,733 people within a 1-mile radius of the site, and 143,412 people within a 5-mile radius of the site (13). The nearest schools are  $\frac{3}{4}$  mile east-southeast of the site and  $\frac{3}{4}$  mile south-southeast of the site. The nearest park is along Fanno Creek,  $\frac{3}{4}$  mile west of the site (12).

### **6.3 Soil Exposure and Air Pathway Conclusions**

The risk posed by the site through the air pathway appears to be low. The area around the site is wholly urbanized within a one-mile radius and mostly urbanized within a four-mile radius. However, the primary suspected contaminant at the site (lead oxide) is not volatile and is unlikely to travel far by air.

The potential for the general public to come into contact with hazardous substances at the site is also low. The site is tucked away behind other commercial and light industrial facilities, and is not visible to traffic on Boones Ferry Road or Interstate 5. Much of the site is paved with

concrete or asphalt, although some areas appear to still be dirt and gravel. The public is likely to visit the site only to rent equipment or retrieve impounded automobiles. The underground storage tank excavation pits remain open and are not well fenced off, but these are expected to be short-term hazards. The limited sampling data since 1974 shows no evidence of significant amounts of lead at the site, and no lead oxide is suspected to have been shipped to the site since at least 1989.

## 7. SUMMARY AND CONCLUSIONS

K-Lines was a bulk products trucking company that operated at the site from 1972 to 1989. The company would refuel and wash its trucks out at the site. In 1974, DEQ received a report that lead oxide had been released at the site. The released lead oxide was reportedly "buried", but the information recorded in DEQ's files did not specify whether the burial was on-site or off-site. K-Lines continued to ship lead oxide, and no more releases were reported at the site. However, samples of wash water collected from the company's wastewater treatment ponds and an unnamed creek to the north of the site showed low levels of lead over the next 15 years.

In 1998, a contractor retained by K-Lines reported that leaking underground fuel storage tanks had been discovered at the site. The contractor removed the tanks, and collected soil and groundwater samples. The contractor analyzed the samples for both petroleum and lead, but the results have not been reported to DEQ. Lead oxide and petroleum products are the only hazardous substances known to have been released at the site. No releases of other hazardous substances are suspected.

DEQ's Site Assessment program reviewed file information on the site in 1995 and concluded that lead oxide may have been buried at the site, perhaps routinely. This information was forwarded to EPA, and the site was added to CERCLIS in 1998.

Lacking direct sampling data, it is difficult to determine whether lead oxide is present at the site in significant quantities or not. Other evidence from around the site, however, suggests that impacts from the site are minor, and that the site is not threatening human health or the environment. The unnamed creek to the north of the site, which receives surface water runoff from the site, is lushly vegetated and shows no signs of stress. Groundwater monitoring wells at the Industrial Coatings site, directly downgradient from K-Lines, have shown no contaminants attributable to K-Lines. The site is also relatively "hidden" and partially fenced, so direct contact by the general public is not thought to be a major concern.

DEQ recommends that cleanup of the petroleum release(s) at the K-Lines site continue under the oversight of DEQ's Leaking Underground Storage Tank (LUST) program. The LUST program will refer any non-tank related hazardous substances that they identify to the Site Assessment program. The Site Assessment program cannot adequately prioritize the site and determine whether further action is necessary until it receives the recent lead sampling results from Steve Berrey's contractor. However, based on current information, it does not appear that the site is a high priority for further agency action.

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